

**In the Claims:**

1. (Currently Amended) An apparatus for producing a beam of charged particles, comprising:

an emitter; ~~(1, 2)~~ and

a switching device ~~(3)~~ adapted to switch between first, second and third beam current levels,

wherein the beam current at said first current level is suitable for writing a pixel of an image on the a surface of a sample, the beam current at said second current level is suitable for not writing a pixel on the surface of said sample, and the beam current at said third current level is lower than the beam current at the second current level.

2. (Currently Amended) The apparatus according to claim 1, wherein said emitter is a field emission cathode ~~(1, 2)~~ and said switching device ~~(3)~~ is adapted to switch between first, second and third voltage levels of an extraction voltage of said field emission cathode ~~(1, 2)~~, wherein said first, second and third voltage levels correspond to said first, second and third current levels.

3. (Currently Amended) The apparatus according to claim ~~1 or 2~~, wherein said switching device ~~(3)~~ comprises a small voltage switching part ~~(3a)~~ for switching between voltages having a first difference, and a large voltage switching part ~~(3b)~~ for switching between voltages having a second difference which is larger than said first difference.

4. (Currently Amended) The apparatus according to claim 3, wherein said first difference is smaller or equal than 5 V and said second difference is greater or equal than 10 V, ~~preferably about 15 V.~~

5. (Currently Amended) The apparatus according to claim 1 ~~any of the preceding claims~~, comprising an array of field emission cathodes.

6. (Original) The apparatus according to claim 5, further comprising an electrode common to all field emission cathodes of the array for simultaneously switching the field

emission cathodes between voltages having a second difference.

7. (Currently Amended) A method for controlling the a beam current of a charged particle beam comprising the steps of

switching the beam current of said charged particle beam between first and second current levels, wherein the beam current at said first current level is suitable for writing a pixel of an image on the a surface of a sample and the beam current at said second current level is suitable for not writing a pixel on the surface of said sample, and

switching the beam current to a third ~~voltage~~ current level, wherein the beam current at said third current level is lower than the beam current at the second current level.

8. (Original) The method according to claim 7, wherein the ratio of the beam currents of said first and second current levels is smaller than the ratio of the beam currents of said second and third current levels.

9. (Currently Amended) The method according to claim 7-~~or 8~~, wherein the ratio of the beam currents of said first and second current levels is larger or equal to  $10^2$ .

10. (Currently Amended) The method according to ~~any of claim~~[[s]] 7-~~to 9~~, wherein the ratio of the beam currents of said first and third current levels is larger or equal to  $10^4$ .

11. (Currently Amended) The method according to ~~any of claim~~[[s]] 7-~~to 10~~, wherein said first current level is at 10 nA, said second current level is at [[0,1]] 0.1 nA, and said third current level is at 1 pA.

12. (Currently Amended) The method according to ~~any of claim~~[[s]] 7-~~to 11~~, wherein the beam current is at the third current level when the charged particle beam performs a turn movement and/or a retrace movement.

13. (Currently Amended) The method according to ~~any of claim~~[[s]] 7-~~to 13~~, wherein

the switching between said second and third current levels is performed when the charged particle beam moves over the ~~sample~~ surface at write scan speed.

14. (Currently Amended) A method for controlling ~~the~~ a beam current of a charged particle beam comprising the steps

producing the charged particle beam by a field emission cathode,

switching ~~the~~ an extraction voltage of said field emission cathode between first and second voltage levels, wherein said first voltage level is suitable for writing a pixel of an image on ~~the~~ a surface of a sample and said second voltage level is suitable for not writing a pixel on the surface of said sample, and

switching the extraction voltage to a third voltage level, wherein said third voltage level is lower than said second voltage level.

15. (Original) The method according to claim 14, wherein the voltage difference between the first and second voltage levels is smaller than the difference between the second and third voltage levels.

16. (Currently Amended) The method according to claim ~~14 or 15~~, wherein the voltage difference between the first and second voltage level is smaller or equal than 5 V and the voltage difference between the second and third voltage level is greater or equal than 10 V, ~~preferably about 15 V~~.

17. (Currently Amended) The method according to ~~any of claim[[s]] 14 to 16~~, wherein the third voltage level is at about 5 V.

18. (Currently Amended) The method according to ~~any of claim[[s]] 14 to 17~~, wherein the extraction voltage is at the third voltage level when the charged particle beam performs a turn movement and/or a retrace movement.

19. (Currently Amended) The method according to ~~any of claim[[s]] 14 to 18~~, wherein the switching between said second and third voltage levels is performed when the charged particle beam moves over the ~~sample~~ surface at write scan speed.

20. (Currently Amended) The method according to ~~any of claim[[s]] 14 to 19~~, wherein the switching between any of the first, second and third voltage levels is performed by tip switching.

21. (Currently Amended) The method according to ~~any of claim[[s]] 14 to 20~~, wherein the switching between any of the first, second and third voltage levels is performed by gate switching.